

~~To what extent can
research influence LIS
curricula ?~~
**How much LIS curriculum
actually makes sense
without research?**

A Humboldtian perspective

Berlin, 29 September 2011

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Overview



- About a rhetorical question
- About teaching
- About DL research
- About Linked Open Data and Web Science
- On Terminology
- On Research and Teaching



HU Mission Statement

"4. **The Unity of Research and Teaching**. Humboldt's ideal of the coexistence of research and teaching has become a model for universities all over the world. Central to this model is **the idea of research-oriented teaching and the transfer of knowledge from the spirit of research**. Students and teachers are joined together in an endeavour to critically examine traditional bodies of knowledge and to actively advance learning. For this reason, the Humboldt-Universität promotes social and communicative competences among all of its members and supports their initiatives wherever it can."

Wilhelm von Humboldt

"It is furthermore a peculiarity of the universities that they **treat higher learning always in terms of not yet completely solved problems**, remaining at all times **in a research mode** ...

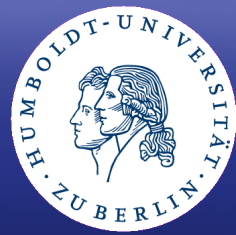
Schools, in contrast, treat only **closed and settled bodies of knowledge**. The relationship between teacher and learner is therefore completely different in higher learning from what it is in schools. At the higher level, the teacher is not there for the sake of the student, **both have their justification in the service of scholarship.**"



What are we teaching?

- Canonised Knowledge?
 - Things that can be gathered from textbooks?
 - Information with definite context?
 - To be reproduced in exams?
- Questions!
 - The ability of coming up with them, asking them
 - Asking questions as a natural state, constituting scholarship
 - The impossibility of definite 'answers' and 'solutions'
- Digital Libraries?
 - It's the terminology, stupid!
 - Back to ECDL 2003

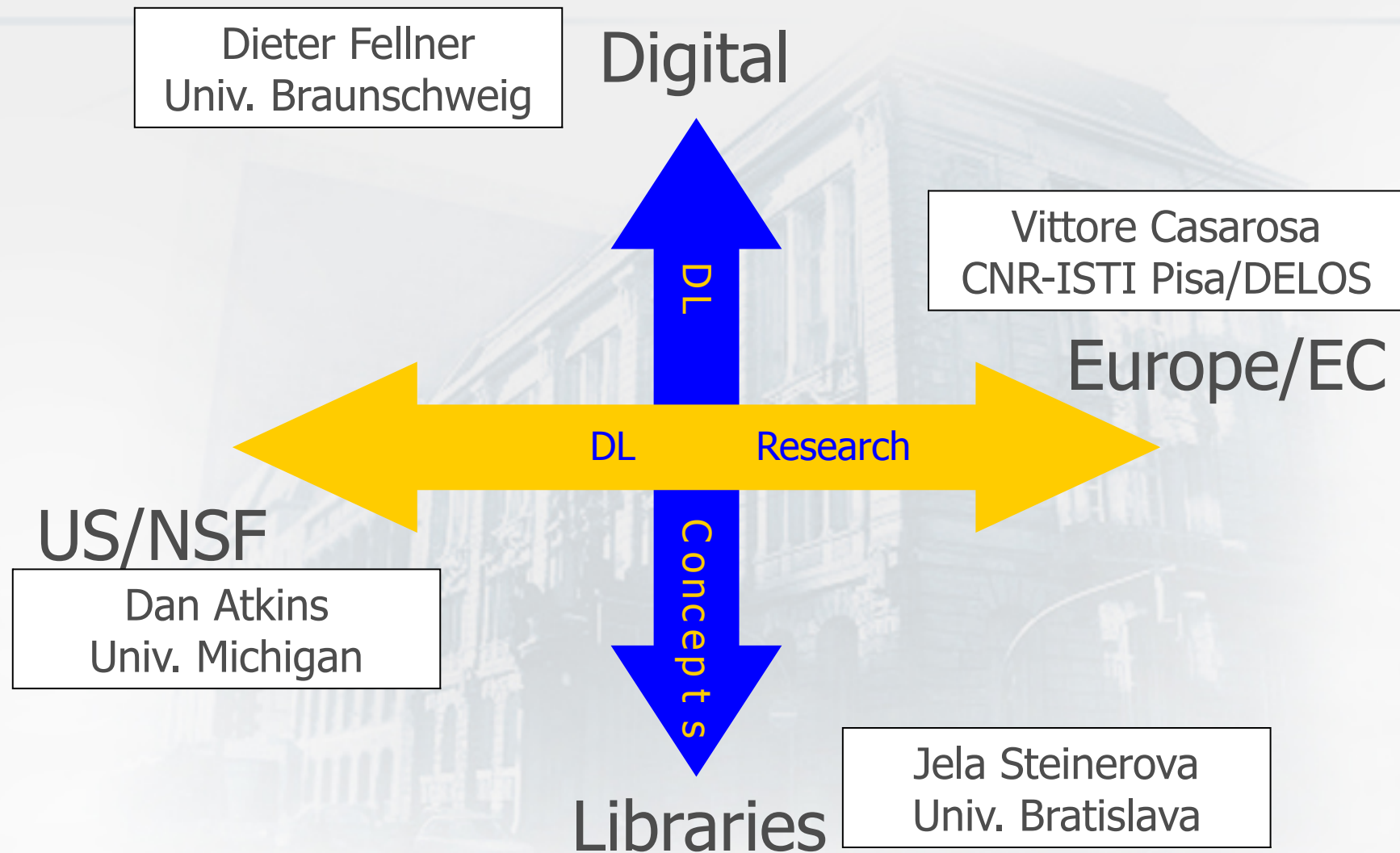
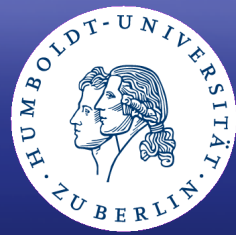
ECDL 2003: Digital? Libraries?



- The Digital Library metaphor has been useful and necessary during a transitional period – but is it still
 - effective/significant?
 - appropriate?
- Or is it starting to be counter-productive or even dangerous?
- Similar questions could be asked referring to DL research.
- ***Names are NOT innocent: things change, and names should change accordingly (even though with a specific delay ...)***
- ‚Meaning‘ is slightly more complex than just ‚referring to‘ and includes such subtleties as ‚connotations‘
- The movie analogy: from ‚Film Theatres‘ to ‚Cinemas‘



Panel 'geometry' and composition



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Since 2003 ... Linked Data

Linked Data essentials

1. Use **URIs** Standard **Identifiers**
2. Use **HTTP URIs** Standard **Pointers**
3. Serve useful information using **SPARQL**, **RDF** standards
4. Mention **URIs of related objects** Standards for **Queries** and **Statements**

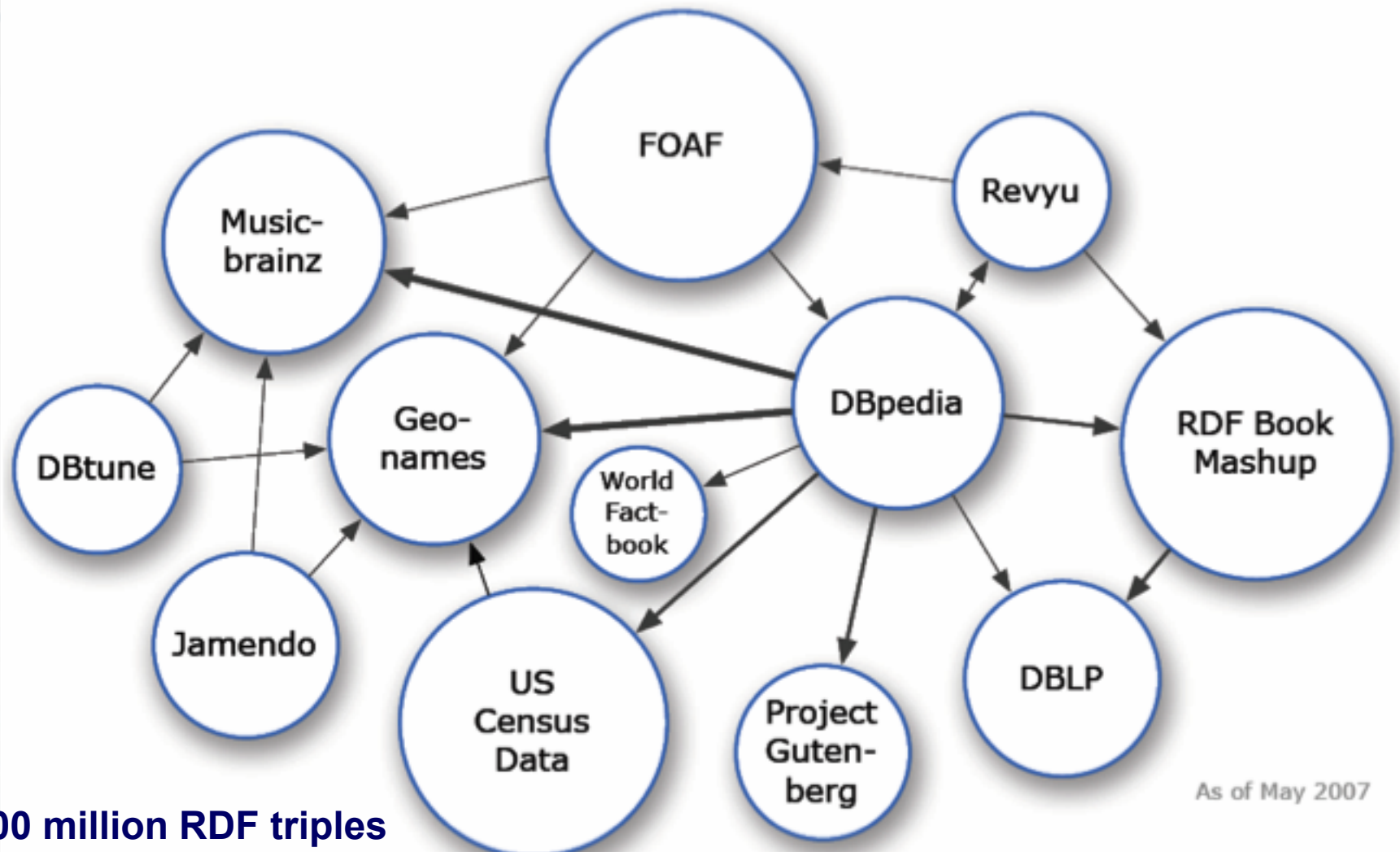
Link to Context

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[http://www.w3.org/2008/Talks/0617-lod-tbl/#\(4\)](http://www.w3.org/2008/Talks/0617-lod-tbl/#(4))



A few Bubbles: 5/2007



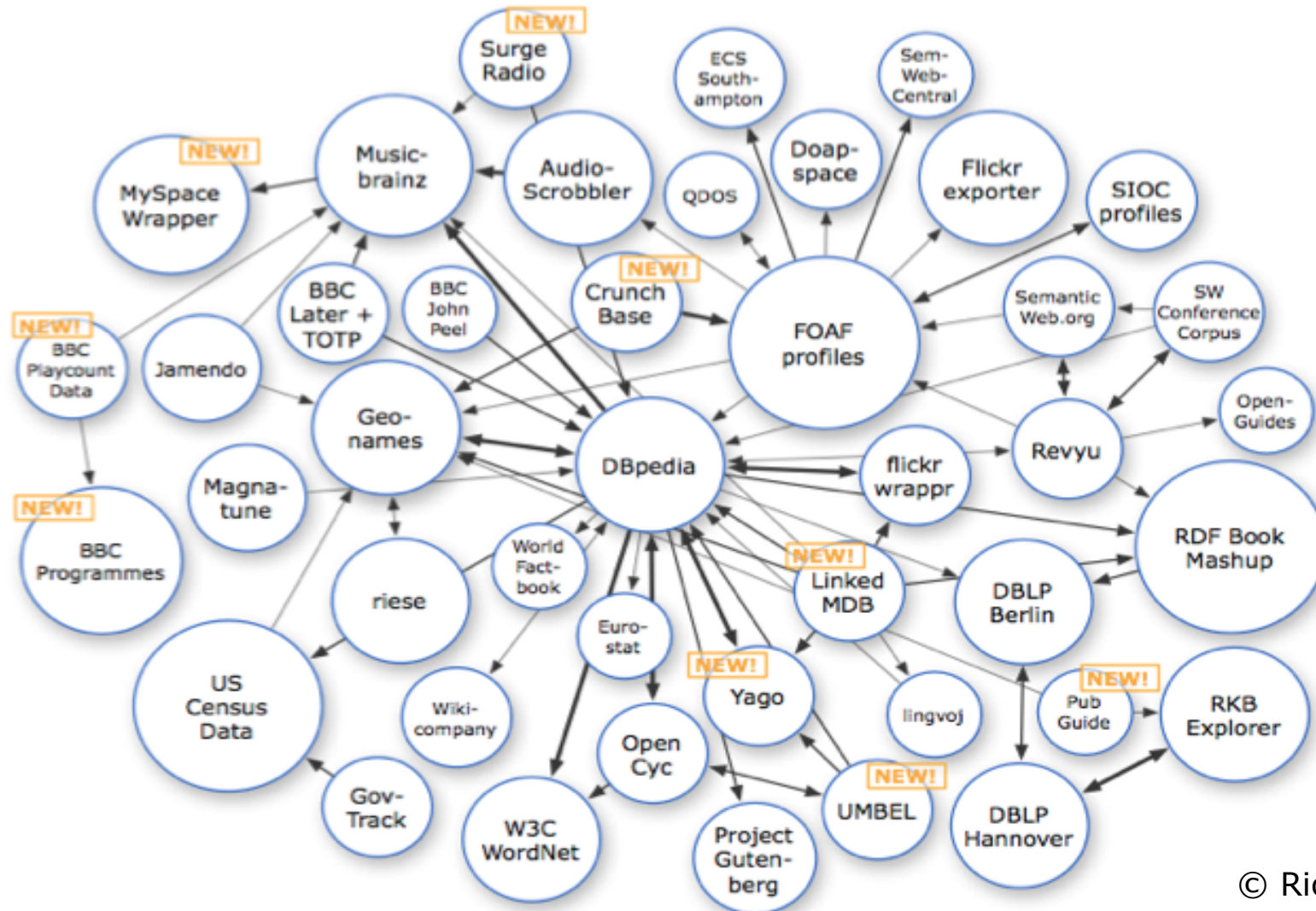
- Over 500 million RDF triples
- Around 120,000 RDF links between data sources

© Richard Cyganiak

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Quite some Bubbles: 9/2008



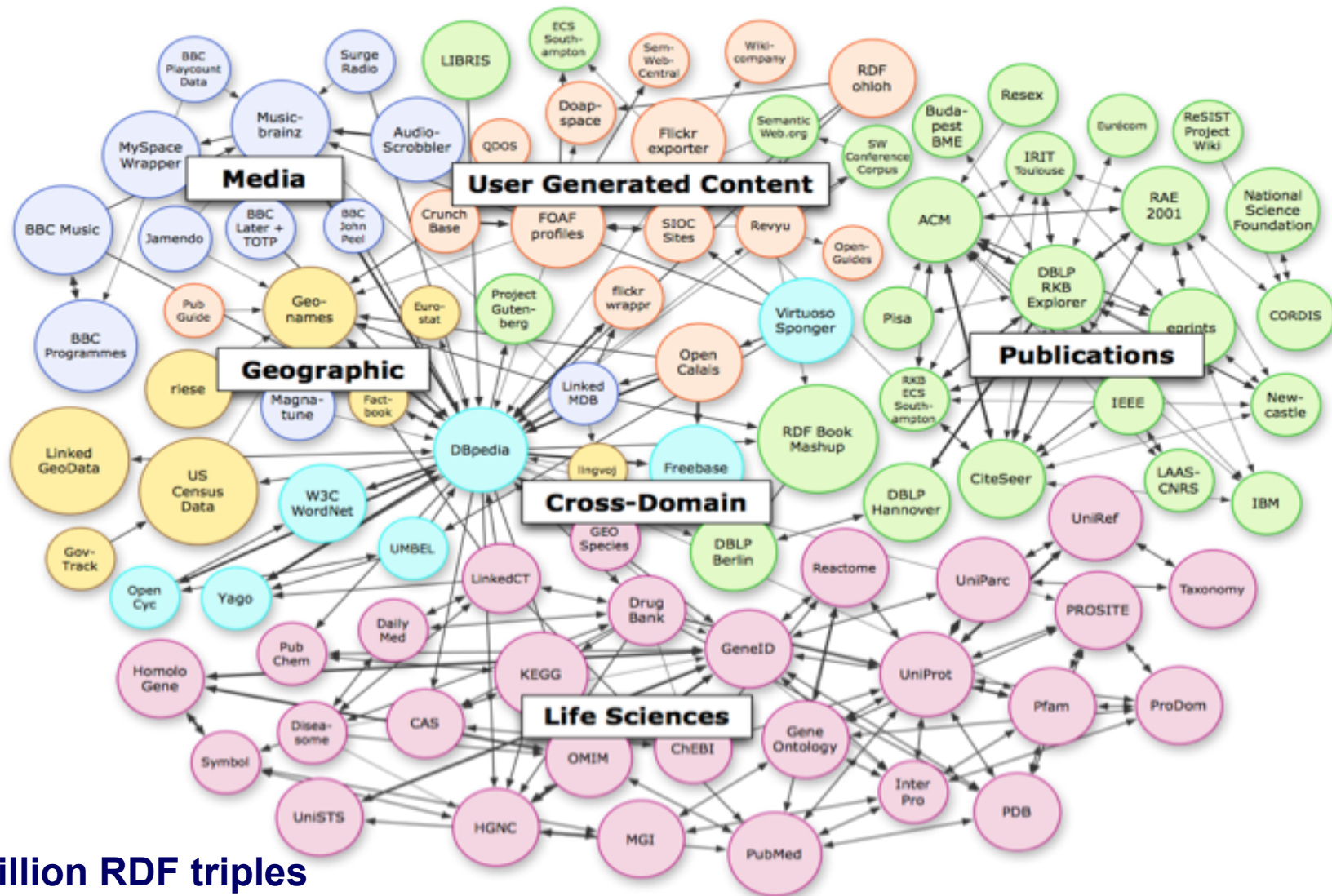
© Richard Cyganiak

As of September 2008

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Many Bubbles: 7/2009



■ Over 13.1 billion RDF triples

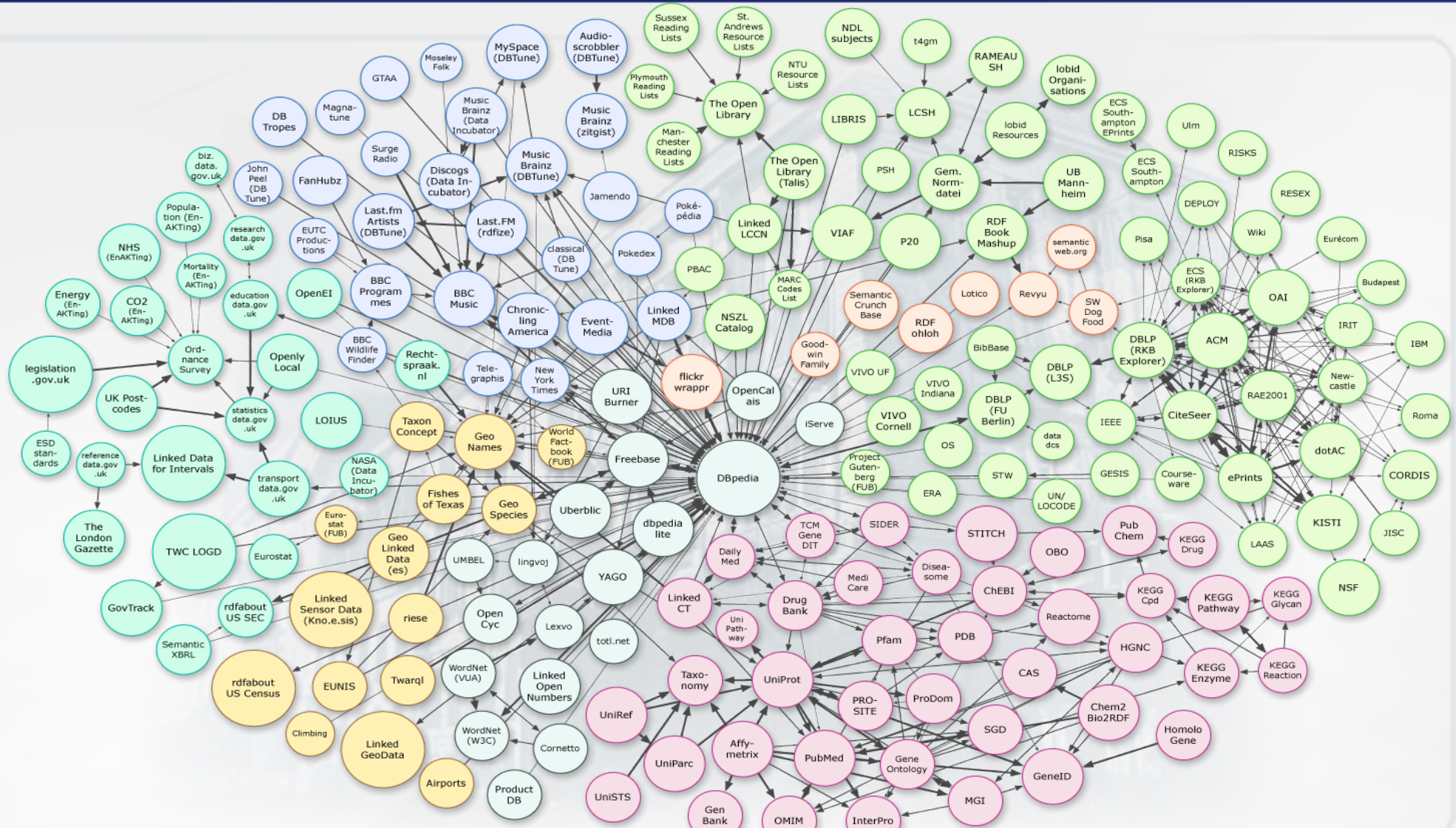
Over 142 million RDF links between data sources

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(Too?) Many Bubbles: 9/2010



http://richard.cyganiak.de/2007/10/ld/ld-datasets_2010-09-22_color.html

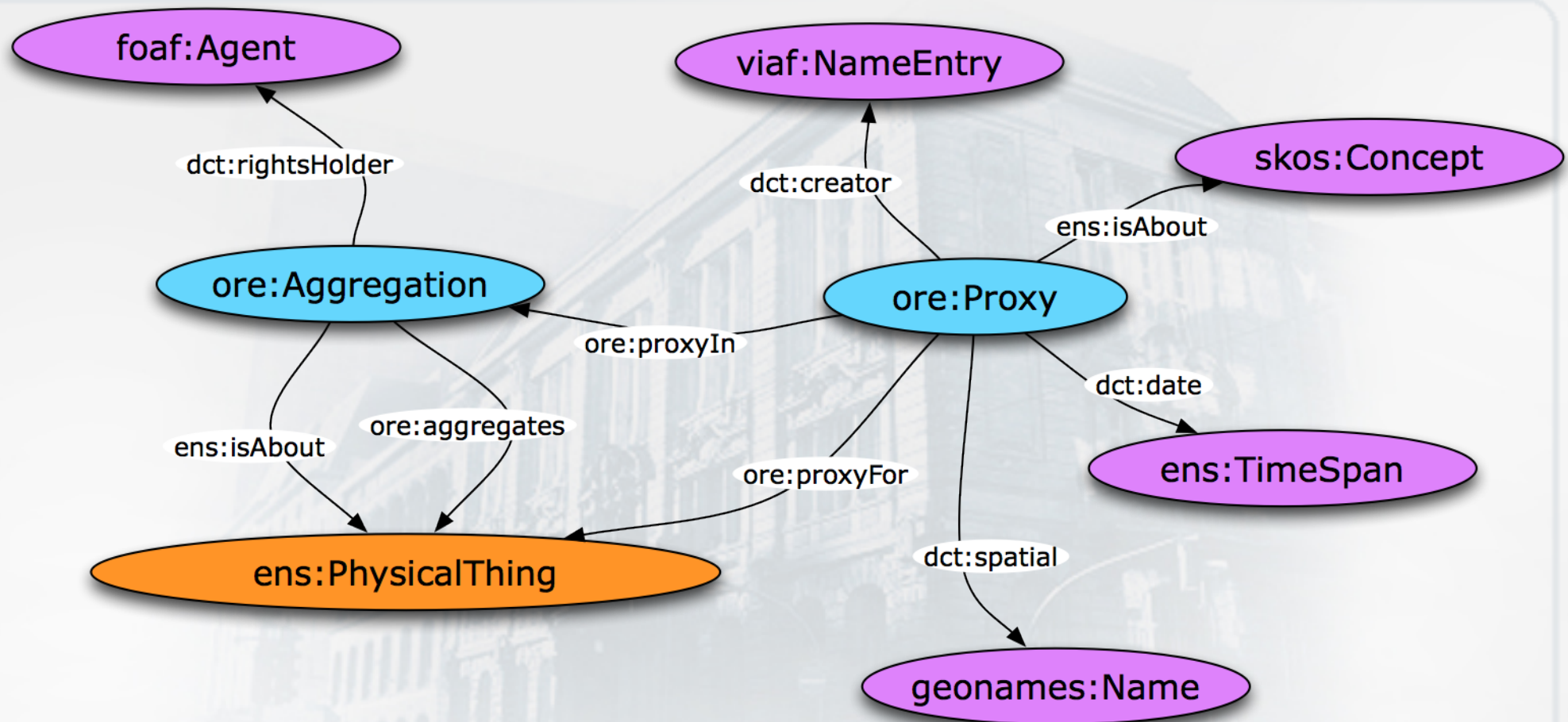
As of September 2010 © ⓘ ⓘ

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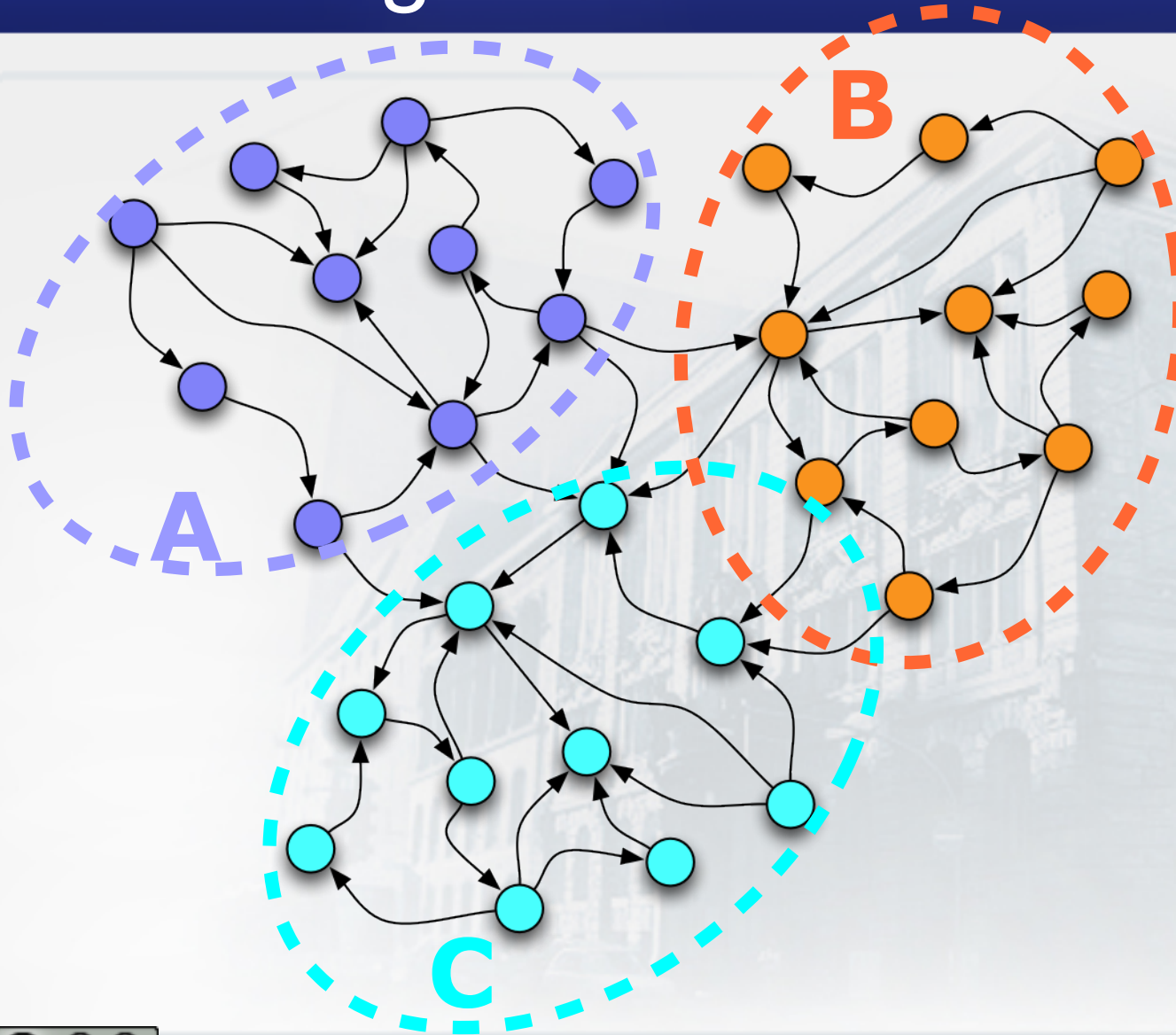
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'Catalog Entries' become part of this cloud, as with the Europeana Data Model (EDM)



... as well as 'publication' aggregations combining 'documents' and 'things'



- Where do resource aggregations 'start'? Where do they 'end'?
- And what constitutes document boundaries??
- And which node was connected to which one at a given time???

Machines can reason on triple sets!



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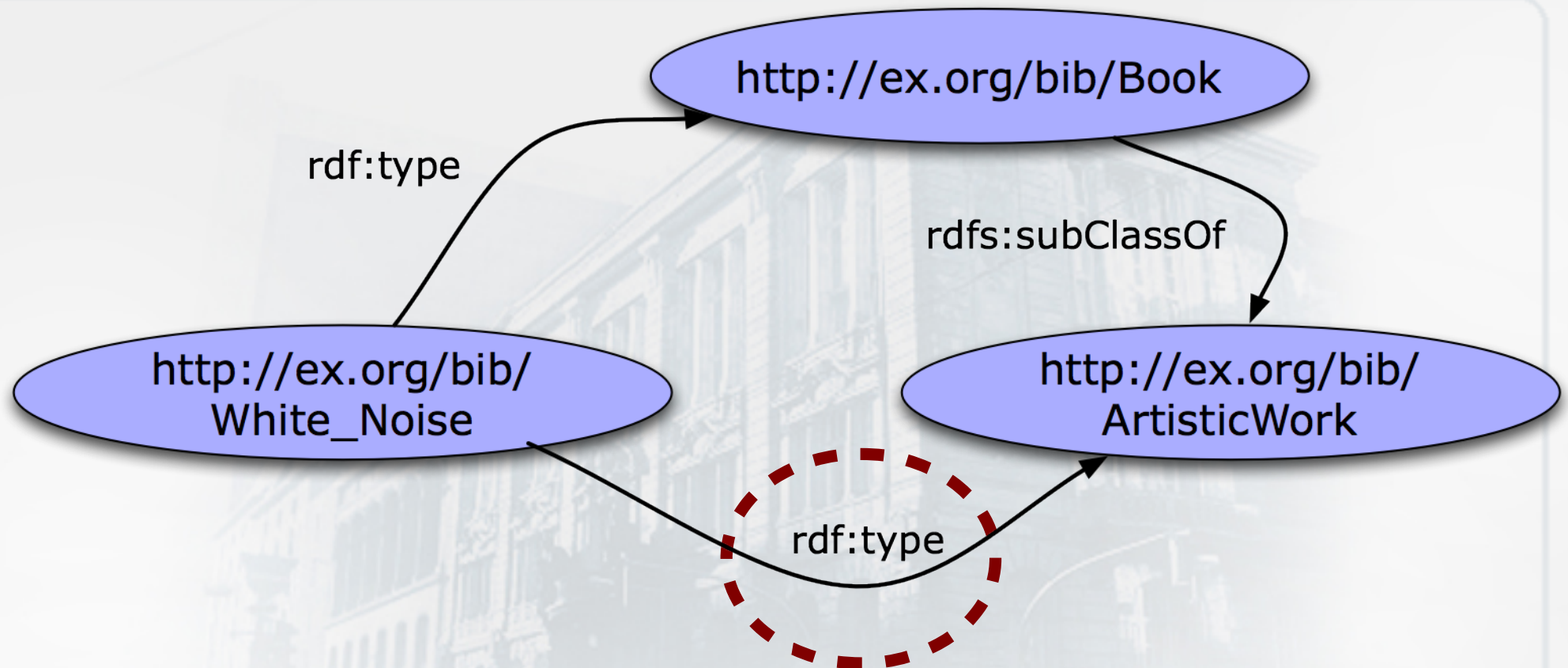
Some reasoning preconditions ...



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... and an automated inference!



There is quite some potential for generating scholarly heuristics here!



The use of Inferences

Citation: van Haagen HHHBM, 't Hoen PAC, Botelho Bovo A, de Morrée A, van Mulligen EM, et al. (2009) Novel Protein-Protein Interactions Inferred from Literature Context. PLoS ONE 4(11): e7894. doi:10.1371/journal.pone.0007894 / Example provided by Jan Velterop



The screenshot shows the PLoS ONE website interface. At the top, there's a navigation bar with links like 'Home', 'Browse Articles', 'About', 'For Readers', 'For Authors and Reviewers', 'Journals', 'Hubs', and 'PLoS.org'. A search bar is also present. The main article title, 'Novel Protein-Protein Interactions Inferred from Literature Context', is highlighted with a red box. Below the title, the authors are listed: Herman H. H. B. M. van Haagen^{1*}, Peter A. C. 't Hoen¹, Alessandro Botelho Bovo², Antoine de Morrée¹, Erik M. van Mulligen¹, Christine Chichester¹, Jan A. Kors¹, Johan T. den Dunnen¹, Gert-Jan B. van Ommen¹, Silvére M. van der Maarel¹, Vinícius Medina Kern², Barend Mons¹, and Martijn J. Schuemie¹. The abstract is visible, starting with 'We have developed a method that predicts Protein-Protein Interactions (PPIs) based on the similarity of the context in which proteins appear in literature. This method outperforms previously developed PPI prediction algorithms that rely on the conjunction of two protein names in MEDLINE abstracts. We show'.

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... based on 'Documents' as Aggregations of RDF-Triples (1)



Assertion

NG_000007.
3:g.70628G>A

has
frequency

0.25%

Condition

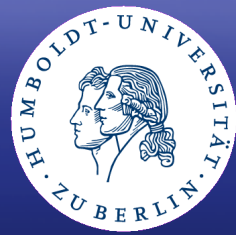
Sardinian

Provenance

Giardine et al



'Documents' as Aggregations of RDF-Triples (2)



```
<nanopublication id="0">
```

```
<assertion>
```

```
<subject>NG_000007.3:g.70628G>A</subject>
```

```
<predicate>has variant frequency</predicate>
```

```
<object>0.25%</object>
```

```
</assertion>
```

```
<condition>Sardinian</condition>
```

```
<provenance>
```

```
<dateofcreation>March 24, 2011</dateofcreation>
```

```
<lastedit>March 24, 2011</lastedit>
```

```
<evidenceType>empirical</evidenceType>
```

```
<authorID>Giardine et. al.</authorID>
```

```
<curatorID>unresolved</curatorID>
```

```
<registrantID>Mons et. al.</registrantID>
```

```
<PMID>6695908</PMID>
```

```
<PMID>1428944</PMID>
```

```
<PMID>1610915</PMID>
```

```
<DOI>http://dx.doi.org/10.1038/ng.785</DOI>
```

```
<linkout>http://globin.bx.psu.edu/cgi-bin/hbvar/query_vars3?
mode=output&display_format=page&i=239</linkout>
```

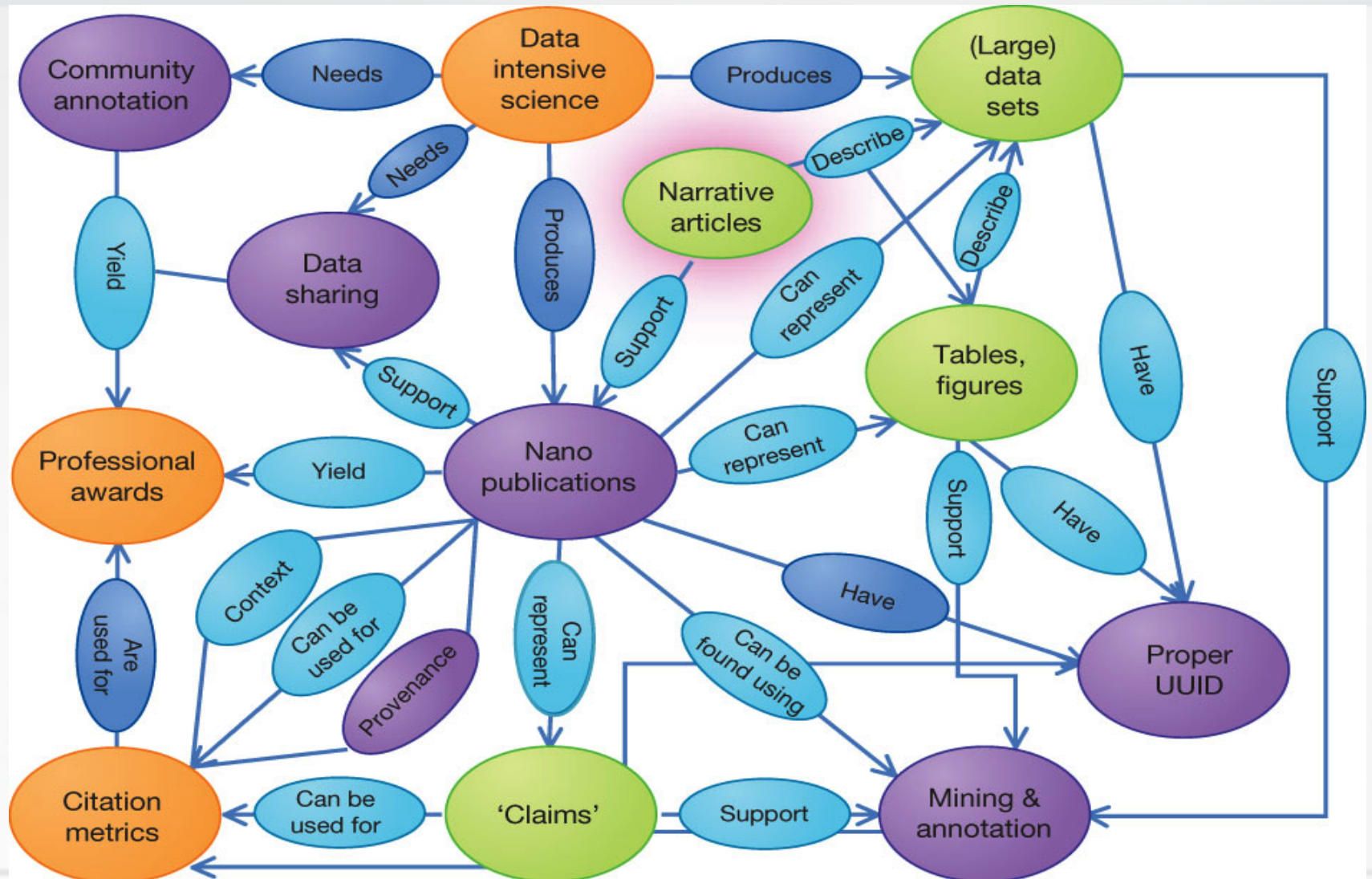
```
<linkout>http://phencode.bx.psu.edu/cgi-bin/phencode/phencode?
build=hg18&id=HbVar.239</linkout>
```

```
</provenance>
```

```
<nanopublication id="0">
```



Nano-Publications and Context



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From Catalogs to Graphs

Changing Terms for a Changing Profession



Ceci n'est pas une bibliothèque



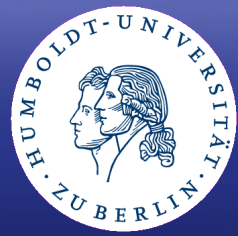
Ceci n'est pas une bibliothèque



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Catalogue



The card catalog
in the nave of
Sterling Memorial
Library at Yale
University.
Picture by Henry
Trotter, 2005.

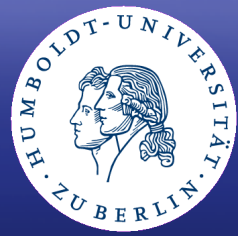
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Catalogue

- “A list, **register**, or complete enumeration” (OED)
- κατάλογος: “enrolment, **register**, catalogue” (LSJ)
- καταλέγειν: “**enumerate**, recount” (LSJ)
- When referring to library catalogues, three traits seem to be constitutive:
 - Reference to “**holdings**”, to a “collection”,
 - which in term needs to be **finite**
 - and the basic entities contained in this collection must be enumerable, **delimited entities** (hence the importance of the document notion in this context)
- These traits seem almost too trivial to mention – but cannot be taken for granted anymore even in the near future

Catalogue Contents



http://bristol.dilib.info/Chopin/images/img_catalogue3.JPG

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Catalogue Entry: Card

Einstein, Albert:

1983

A

1722

Briefwechsel : 1916 - 1955 / Albert Einstein ;
Hedwig u. Max Born. Komment. von Max Born. Geleitet
von Bertrand Russell. Vorw. von Werner Heisenberg.
Frankfurt : Erbrich, 1982. - 329 S. ; 20 cm

Lizenz d. Nymphenburger Verlagshandlung, München
ISBN 3-88682-005-X

NE: Born, Hedwig;; Born, Max:



8am

© Deutsches Museum

Catalogue Entry: MARC Record



LEADER: 00495cam 2200169 a 4500

001 94205672

003 DLC

005 20040108112243.0

008 940907s1926 gw 000 1 ger

010 \$a 94205672

040 \$aDLC\$cDLC\$dDLC

050 00 \$aPT2621.A26\$bS36 1926

100 1 \$aKafka, Franz,\$d1883-1924.

245 14 \$aDas Schloss :\$bRoman /\$cFranz Kafka.

260 \$aMünchen :\$bKurt Wolff Verlag,\$c1926.

300 \$a503 p. ;\$c20 cm.

561 \$aSource: Bequest of Aaron Copland, Fall, 1989.\$5DLC



'Library Holdings'



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Photo © Ralf Küpper

30

... and its constituent information objects



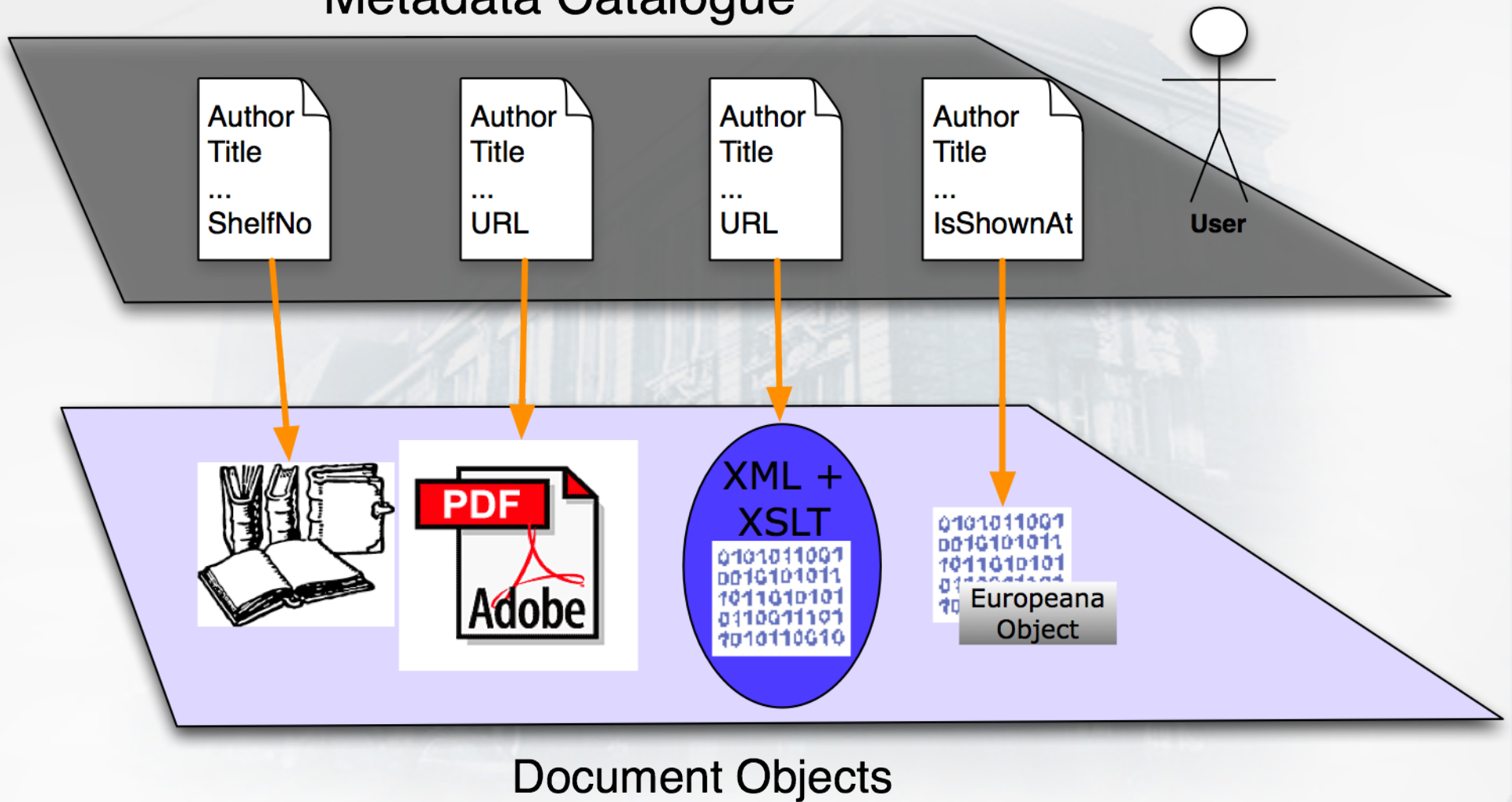
'biblia', 'libri':
finite,
'monolithic'
entities



Catalogue Based Library Functional Axioms (1)



Metadata Catalogue



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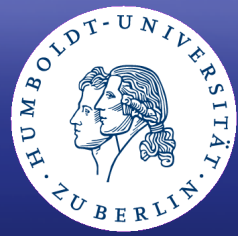
Catalogue Based Library Functional Axioms (2)



- **Mediating access** to information objects via **catalogues**
- **Mediating links** as pointers from metadata to objects
- Objects are part of a library **collection**
 - An object to be used within a library typically is part of this library's collection
- Internal processing logic: focus on
 - objects as information **containers**,
 - not so much on the **content** of these containers
- **Ingestion, storage, description** and **retrieval** of information objects as functional macro-primitives
- The catalogue was the very heart of this paradigm.
- Cataloguing was a core activity in terms of professional identity.



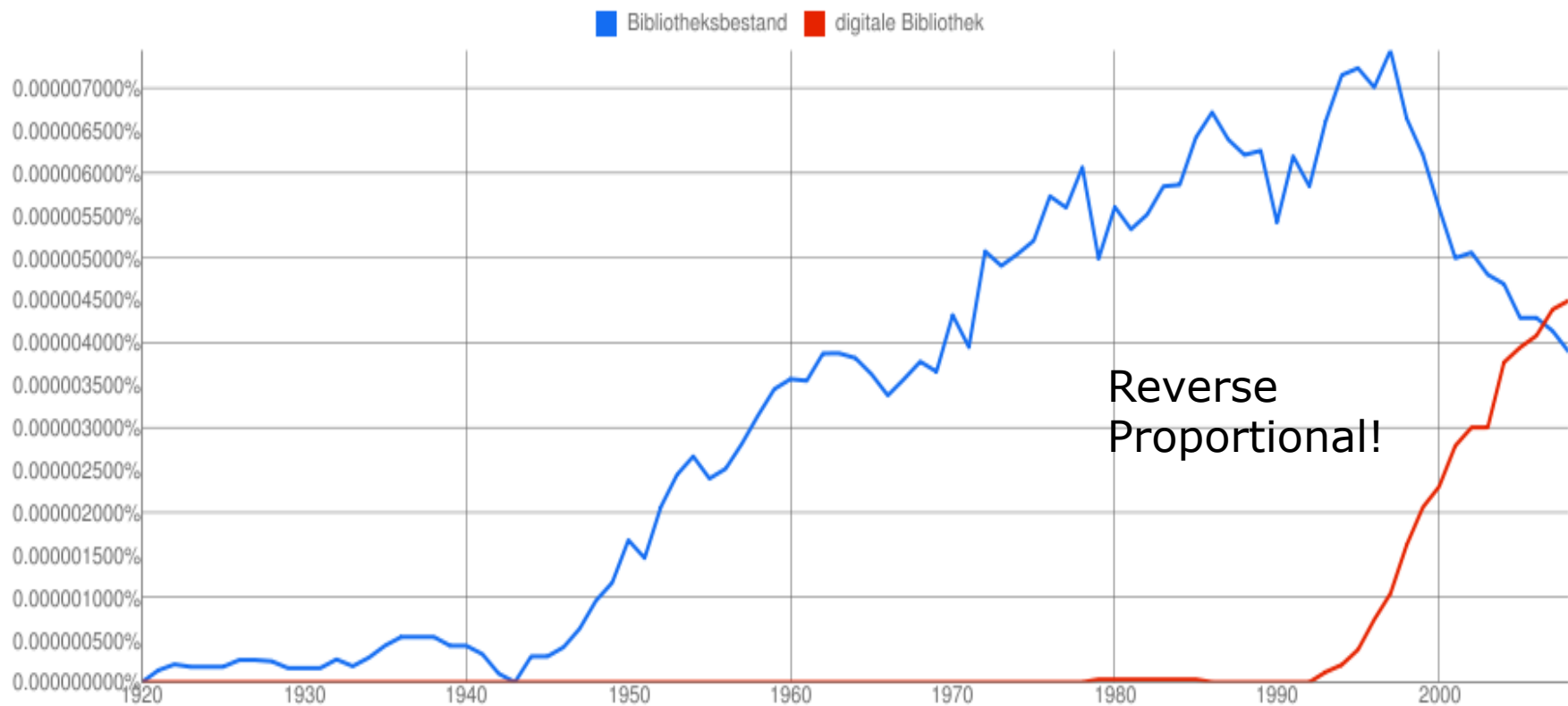
From 'Catalogues' to 'Graphs': old Words – new Words (1)



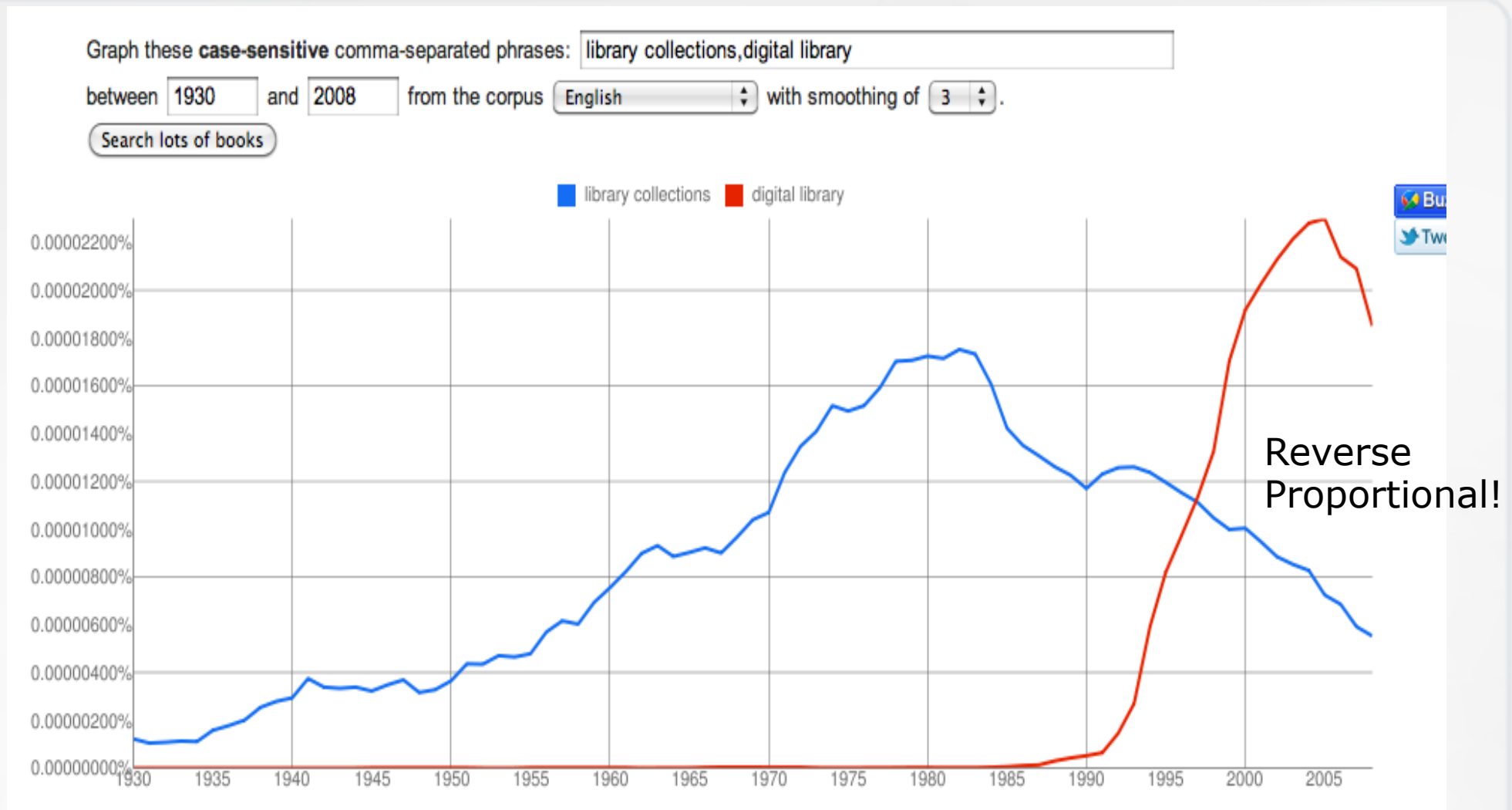
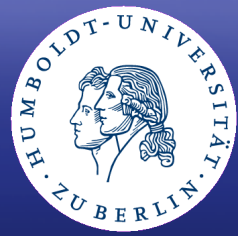
Graph these **case-sensitive** comma-separated phrases:

between and from the corpus with smoothing of .

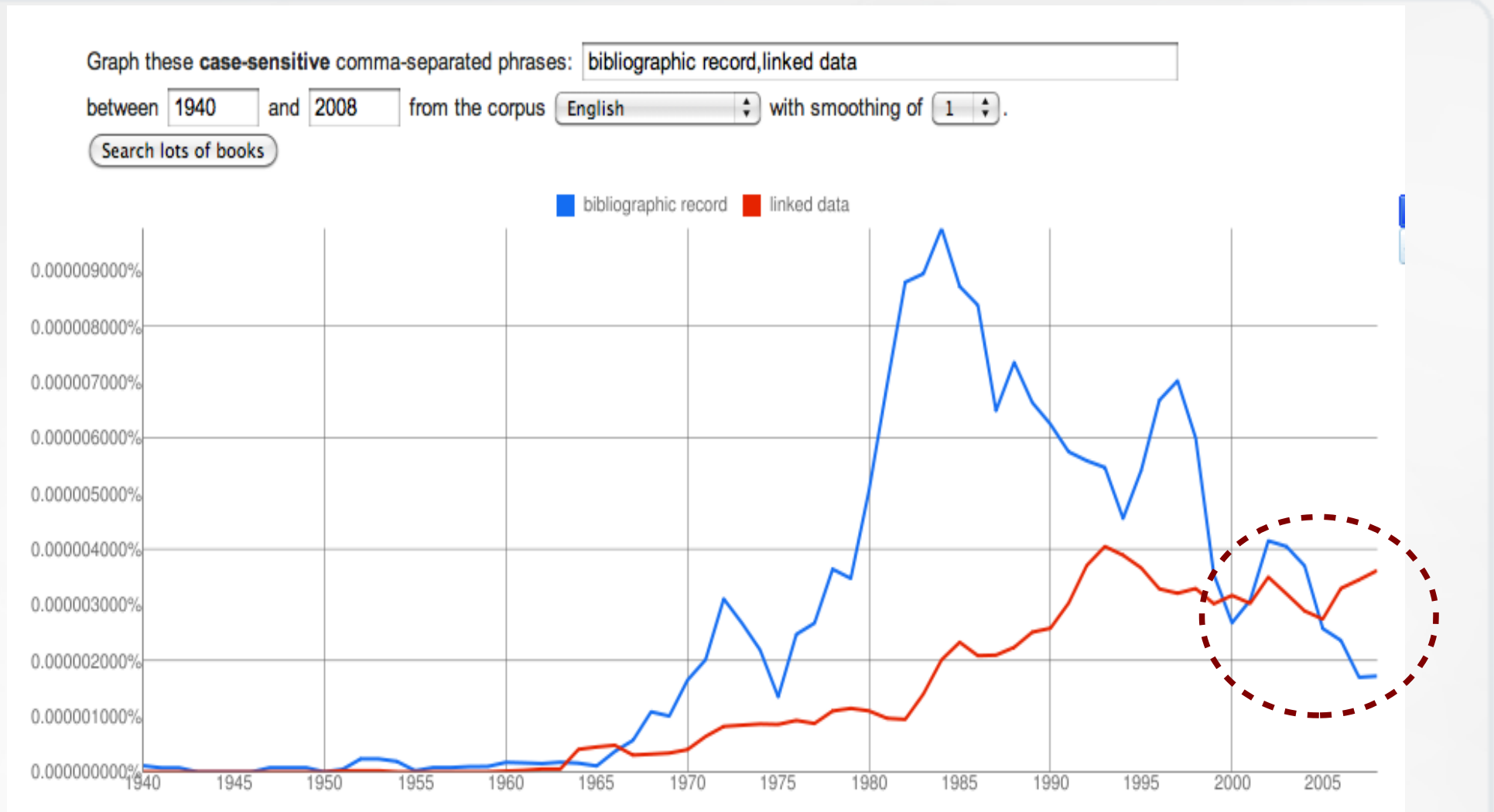
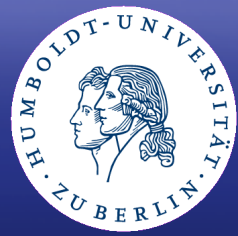
[Search lots of books](#)



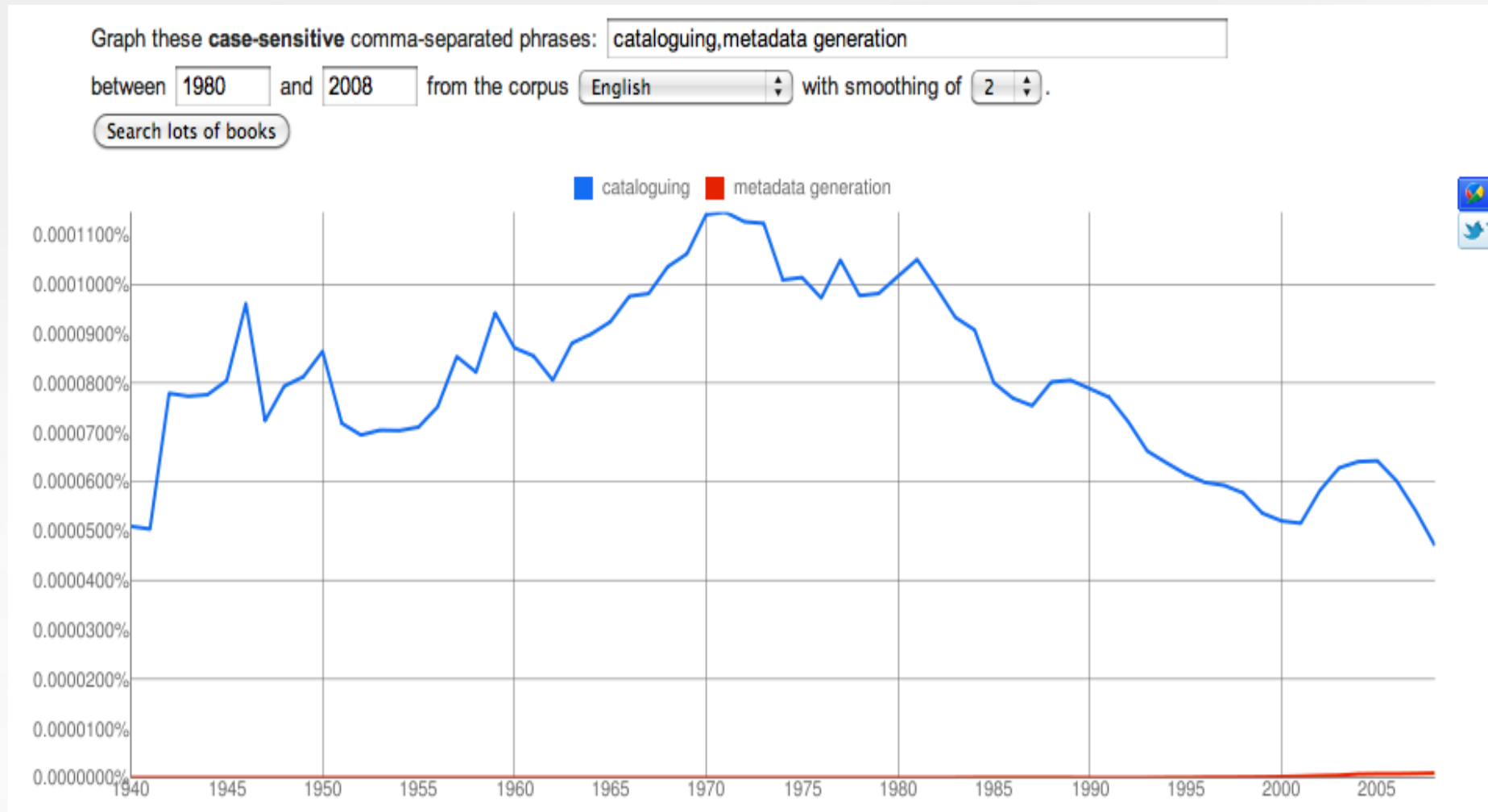
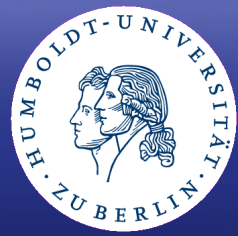
From 'Catalogues' to 'Graphs': old Words – new Words (2)



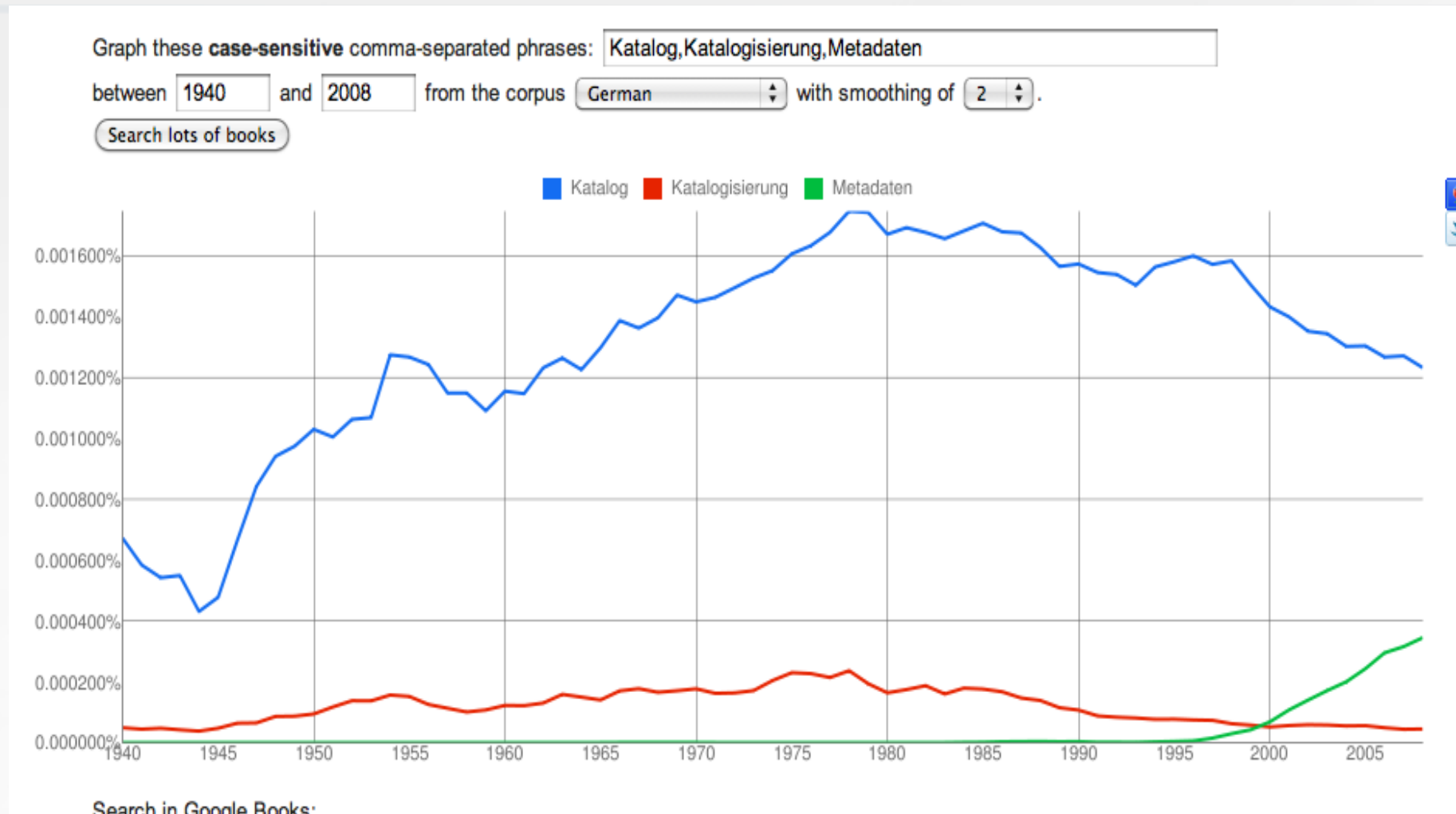
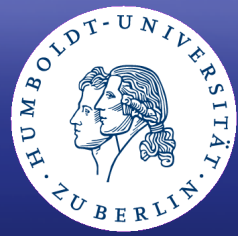
From 'Catalogues' to 'Graphs': old Words – new Words (3)



From 'Catalogues' to 'Graphs': old Words – new Words (4)



From 'Catalogues' to 'Graphs': old Words – new Words (5)



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Sticking to empty metaphors ...

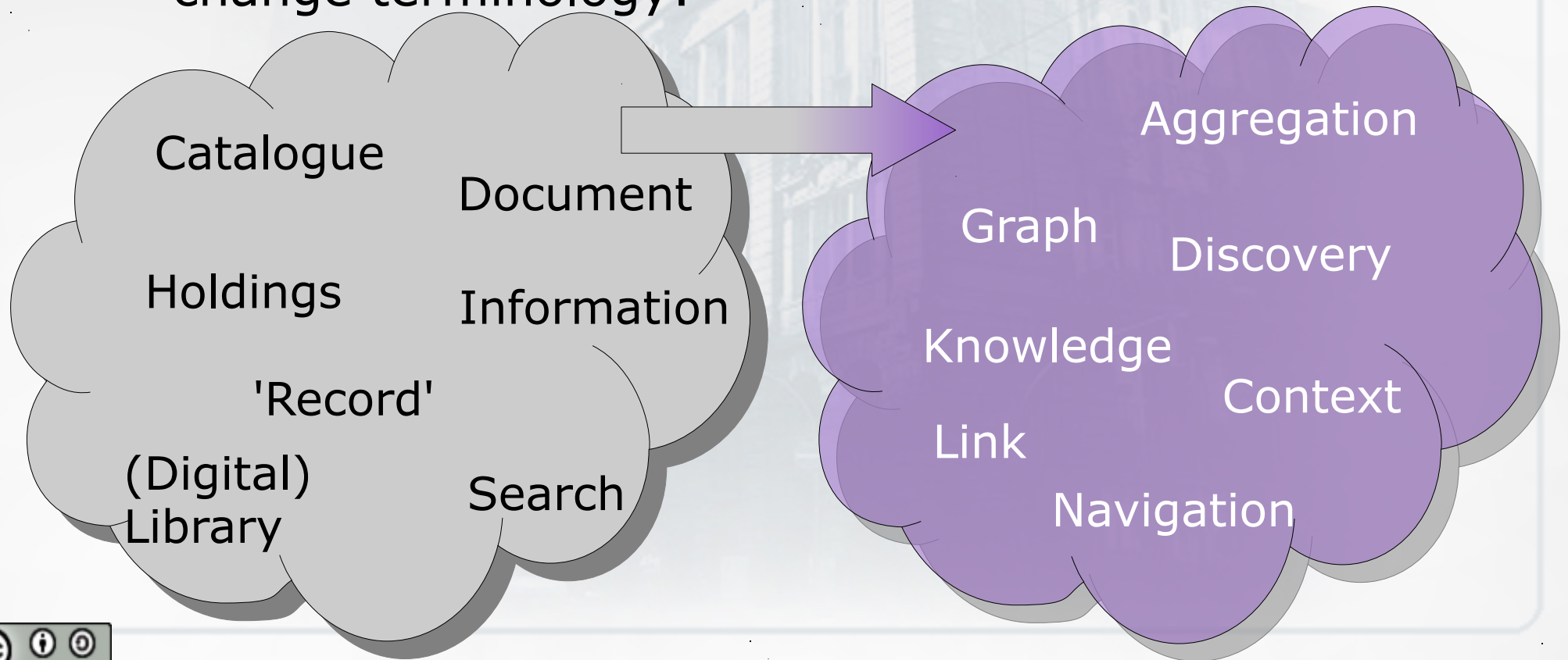
"What's in a name? That which we call a rose
By any other name would smell as sweet."
(Shakespeare, Romeo and Juliet (II, ii, 1-2))

- Why then do we stick to emptied metaphors?
- ... because they **constitute identity** (a very bad reason!)
- ... because they guarantee **institutional persistency** (a fallacy!)
- ... because we are afraid of substantial changes and believe in **things changing only once we use new names** (dangerously childish!)
- ... or simply because **we do not have new names** yet (let us then start looking for them!)



Change Terminology!

- Libraries will become part of the Linked Open Data web – or else risk becoming insignificant.
- For operating this change they imperatively need to change terminology:



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Back to Teaching & Research



- Changing terminology is about **signification** and **interpretation**, about **asking questions** and **understanding** ...
- ... which in turn are inseparably constituents of both teaching and research!
- This brings us back to



And in the context of my work teaching and research mostly converge in



europæana
think culture

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